

AMENDMENTS TO THE CLAIMS

Please amend the pending claims as indicated below:

1. (previously amended) A method of containing a reactor pressure vessel head with attached control rod mechanisms for transport as radioactive materials, the method comprising:
 - coating exterior surfaces of the reactor pressure vessel head with a fixative material;
 - packaging the control rod drive mechanisms within a protective covering;
 - attaching the reactor pressure vessel head to a bottom plate; and
 - placing the reactor pressure vessel head within a transport container while the reactor pressure vessel head is in a reactor containment building.
2. (original) The method of Claim 1, wherein said reactor pressure vessel head comprises the reactor pressure vessel head of a pressurized water reactor vessel.
3. (original) The method of Claim 1, comprising coating exterior surfaces of said pressure vessel head with sealant.
4. (previously amended) The method of Claim 1, comprising filling a gap between the pressure vessel head, the control rods, and the container with a stabilizer.
5. (previously amended) The method of Claim 4, wherein filling said gap with stabilizer comprises filling said gap with low density cellular concrete.
6. (cancelled)

7. (original) The method of Claim 1, wherein said transport container comprises multiple modular sections.
8. (original) The method of Claim 1, comprising filling at least a portion of said intact reactor pressure vessel head with a stabilizer.
9. (previously amended) A method of containing a reactor pressure vessel head with attached control rod mechanisms for transport as radioactive materials, the method comprising:
 - using a multi-piece universal container to permit access of the container parts into the building containing the reactor;
 - using a two-piece bottom plate to permit unencumbered shipment from a fabricator and to provide access into the building containing the reactor; and
 - sealing the container using a series of flanged and gasketed surfaces.
10. (previously amended) The method of Claim 9, comprising coating exterior surfaces of the reactor pressure vessel head with sealant.
11. (previously amended) The method of Claim 9, comprising filling a gap between the pressure vessel head, the control rods, and the container with a stabilizer.
12. (previously amended) The method of Claim 9, comprising sealing said container.
13. (original) The method of Claim 9, wherein said reactor pressure vessel head is the reactor pressure vessel head of a pressurized water reactor vessel.
14. (original) The method of Claim 9, comprising filling at least a portion of said intact reactor pressure vessel head with a stabilizer.

15. (previously amended) The method of Claim 11, wherein filling said gap with stabilizer comprises filling said gap with low density cellular concrete.

16. (previously amended) A method of sealing joints of a container for a reactor pressure vessel head with attached control rod mechanisms using gasket configurations that provide for gamma shielding, the method comprising:

defining joints perpendicular to the container axis with semicircular plates welded to the container section flanges;

defining joints parallel to the container axis with rectangular plates welded to the container section flanges;

locating the semicircular plates used for sealing inside the diameter of the rectangular plates used for sealing.

17. (previously amended) The method of Claim 16, comprising coating an interior surface of said reactor pressure vessel head with sealant.

18. (previously amended) The method of Claim 16, comprising substantially filling a gap between the interiors of said container and said reactor pressure vessel head with a stabilizer.

19. (previously amended) The method of Claim 16, wherein said filling said gap with stabilizer comprises filling said gap with low density cellular concrete.

20. (cancelled)

21. (cancelled)

22. (previously amended) The method of Claim 16, comprising filling at least a portion of said reactor pressure vessel head with a stabilizer.

23. (missing in original)

24. (original) The method of Claim 16, wherein said intact reactor pressure vessel head comprises the reactor pressure vessel head of a pressurized water reactor vessel.

25. (previously amended) Apparatus for the containment and transport of a reactor vessel pressure head with attached control rod mechanisms as radioactive materials, the apparatus comprising:

a plurality of partial circular sections attached to each other and to the reactor pressure vessel head;

a bottom plate attached to the pressure vessel head in a corner configuration adapted to minimize and/or absorb shocks; and

a plurality of protuberances surrounding the reactor pressure vessel head to absorb shock.

26. (original) The apparatus of Claim 25, wherein said reactor pressure vessel head comprises the reactor pressure vessel head of a pressurized water reactor vessel.

27. (cancelled)

28. (previously amended) The apparatus of Claim 25, wherein said plurality of partial circular sections are attached to each other in series.

29. (previously amended) The apparatus of Claim 25, further comprising a stabilizer, which is introduced in a gap between an interior of said sections and said pressure vessel head.

30. (previously amended) The apparatus of Claim 25, wherein said reactor pressure vessel head comprises a head-to-body attachment.

31. (original) The apparatus of Claim 30, wherein said reactor pressure vessel head is attached to said bottom plate.

32. (previously amended) The apparatus of Claim 25, wherein said apparatus comprises a canister when assembled.

33. (currently amended) A method of fabricating a containment vessel for use in removing a reactor pressure vessel head with attached control rod mechanisms from a nuclear power plant, the method comprising:

fabricating a plurality of semi-circular flanged components having respective cross sections of sufficient dimensions to accommodate the reactor pressure vessel head, from sheet material;

fabricating a plurality of partial cylinder sections, each partial cylinder sections suitable for transit through a reactor containment building access hatch;

transporting said partial cylinder sections to the power plant site in a truck; and

transporting a two piece bottom plate to the power plant site in a truck.

34. (previously amended) The method of Claim 33, wherein said components are assembled in series to form a tubular body inside said reactor containment building.

35. (previously presented) A method of packaging a nuclear reactor pressure vessel head with attached control rods as radioactive material, comprising:

providing, in a structure containing a nuclear reactor pressure vessel having a head, a plurality of components of a multi-component container;

removing the pressure vessel head from the pressure vessel with at least one control rod attached; and

attaching at least one of the plurality of components to at least one of the pressure vessel head and another of the plurality of components while the plurality of components and the pressure vessel head are in containment.

36. (previously presented) The method of claim 35, comprising assembling remaining components of the multi-component container about the pressure vessel head and the at least one attached control rod to contain the pressure vessel head and the at least one control rod.

37. (previously presented) The method of claim 36, wherein the assembling remaining components of the multi-component container about the pressure vessel head and the at least one attached control rod to contain the pressure vessel head and the at least one control rod is performed in the containment structure.

38. (previously presented) The method of claim 36, wherein the assembling remaining components of the multi-component container about the pressure vessel head and the at least one attached control rod to contain the pressure vessel head and the at least one control rod comprises attaching at least one of the components outside the containment structure.

39. (previously presented) The method of claim 35, wherein the plurality of components comprises an anti-contamination sock.

40. (previously presented) The method of claim 39, wherein the attaching at least one of the plurality of components to at least one of the pressure vessel head and another of the plurality of components comprises covering at least a portion of at least one of the pressure vessel head and the at least one control rod with the anti-contamination sock.

41. (previously presented) The method of claim 35, comprising coating at least a portion of an exterior of the pressure vessel head with a fixative.

42. (previously presented) The method of claim 35, comprising disconnecting the at least one control rod from another mechanism.

43. (previously presented) The method of claim 42, wherein the another mechanism comprises a drive mechanism.

44. (previously presented) The method of claim 42, wherein the disconnecting the at least one control rod from another mechanism comprises severing the control rod.

45. (previously presented) The method of claim 35, wherein the attaching at least one of the plurality of components to at least one of the pressure vessel head and another of the plurality of components comprises attaching the pressure vessel head to the at least one component using structures on the pressure vessel head adapted for attachment of the head to the pressure vessel.

46. (previously presented) The method of claim 35, wherein at least one of the components comprises a flange, and the method comprises providing a seal between the flange and another component.

47. (previously presented) The method of claim 45, wherein the seal comprises a gasket.

48. (previously presented) A method of packaging a nuclear reactor pressure vessel head with attached control rods as radioactive material, comprising:

bringing into a structure containing a nuclear reactor pressure vessel having a head a plurality of components of a multi-component container, the components including a bottom section, one or more cylindrical sections, and a top section;

removing the pressure vessel head from the pressure vessel with a plurality of control rods attached;

attaching the pressure vessel head to the bottom section inside the containment building; disposing the one or more cylindrical sections about the plurality of control rods;

attaching the one or more cylindrical sections to at least one of the pressure vessel head and the bottom section; and

attaching the top section to the one or more cylindrical sections to enclose the pressure vessel head and attached control rods.

49. (previously presented) The method of claim 48, comprising assembling at least one of the bottom section, the one or more cylindrical sections, and the top section from one or more parts.

50. (previously presented) The method of claim 48, wherein at least one of the components comprises a flange, and the method comprises providing a seal between the flange and another component.

51. (previously presented) The method of claim 50, wherein the seal comprises a gasket.

52. (previously presented) The method of claim 48, comprising covering at least a portion of the plurality of attached control rods with a protective covering.

53. (previously presented) The method of claim 52, wherein the protective covering comprises an anti-contamination sock.

54. (previously presented) The method of claim 48, comprising coating at least a portion of an exterior of the pressure vessel head with a fixative.

55. (previously presented) The method of claim 48, comprising disconnecting the plurality of control rods from other mechanisms.

56. (previously presented) The method of claim 55, wherein the disconnecting the plurality of control rods from other mechanisms comprises severing at least one control rod.

57. (previously presented) The method of claim 48, wherein at least one cylindrical section or the top section is attached outside the containment structure.

58. (previously presented) A method of packaging a nuclear reactor pressure vessel head with attached control rods as radioactive material, comprising:

covering with a protective cover at least a portion of at least one of:

a pressure vessel head of a nuclear reactor pressure vessel, and

a plurality of control rods attached to the pressure vessel head;

removing the pressure vessel head with the plurality of attached control rods from the nuclear reactor pressure vessel;

assembling a multi-component container about the pressure vessel head and the attached control rods.

59. (previously presented) The method of claim 58, wherein the protective cover comprises an anti-contamination sock.

60. (previously presented) The method of claim 58, wherein the protective cover comprises temporary shielding.

61. (previously presented) The method of claim 58, wherein at least one component of the multi-component container is configured to pass through an existing access to a structure containing the nuclear reactor pressure vessel.

62. (previously presented) The method of claim 58, wherein the covering with a protective cover is at least partly performed inside a containment structure.

63. (previously presented) The method of claim 58, wherein the assembling a multi-component container is at least partly performed inside a containment structure.

64. (previously presented) The method of claim 58, wherein the covering with a protective cover is at least partly performed outside a containment structure.

65. (previously presented) The method of claim 58, wherein the assembling a multi-component container is at least partly performed outside a containment structure.

66. (previously presented) The method of claim 58, wherein at least one of the components of the multi-component container comprises a flange, and the method comprises providing a seal between the flange and another component.

67. (previously presented) The method of claim 66, wherein the seal comprises a gasket.

68. (previously presented) A multi-component container for a nuclear reactor pressure vessel head with attached control rods, comprising:
a bottom component adapted for attachment to a nuclear reactor pressure vessel head;
and
at least one cylindrical component configured for at least partial containment of at least one control rod attached to the pressure vessel head; at least one of the components configured to pass through an existing access to a structure containing a nuclear reactor pressure vessel, and for attachment to at least one of the pressure vessel head and the another component inside the containment structure.

69. (previously presented) The container of claim 68, comprising a top component adapted for attachment to the at least one cylindrical section.

70. (previously presented) The container of claim 68, wherein at least two of the components comprise flanges adapted for attaching the components to each other.

71. (previously presented) The container of claim 70, wherein the flanges are adapted for providing a seal between the flanges when the components are attached.

72. (previously presented) The container of claim 71, wherein the flanges are adapted for attaching a first cylindrical component to a second cylindrical component.

73. (previously presented) The container of claim 71, wherein the flanges are adapted for attaching a cylindrical component to at least one of a bottom component and a top component.

74. (previously presented) The container of claim 71, wherein the seal comprises a gasket.

75. (previously presented) The container of claim 71, wherein the seal comprises at least one of neoprene, rubber, nylon, butyl-N, and Teflon.

76. (previously presented) The container of claim 68, wherein at least one of the components comprises a flange adapted for absorbing shocks.

77. (previously presented) The container of claim 68, wherein at least one of top component and the bottom component are circular when the container is assembled.

78. (currently amended) The container of claim 68, wherein the at least a portion of the container is one of circular cross section, and non-circular cross-section, when the container is assembled.

79. (previously presented) The container of claim 68, wherein the at least a portion of the container is of non-circular cross section when the container is assembled.

80. (previously presented) The container of claim 68, comprising at least one cylindrical component configured to contain at least a portion of the reactor pressure vessel head.

81. (previously presented) The container of claim 68, wherein at least one of the bottom component, the top component, and the at least one cylindrical component is provided in one or more parts configured for passing through an access in the containment structure prior to assembly of the container.

82. (previously presented) The container of claim 68, wherein the bottom component is adapted for attachment to the pressure vessel head using structures on the pressure vessel head adapted for attachment of the head to the pressure vessel.

83. (previously presented) The container of claim 68, wherein the bottom component comprises bosses configured for attachment to structures on the pressure vessel head adapted for attachment of the head to the pressure vessel.

84. (previously presented) A multi-component container for a nuclear reactor pressure vessel head with attached control rods, comprising:

at least one cylindrical component configured for at least partial containment of at least one control rod attached to the pressure vessel head; at least one of the components configured to pass through an existing access to a structure containing a nuclear reactor pressure vessel, and for attachment to at least one of the pressure vessel head and the another component inside the containment structure; and

at least one secondary shield adapted for disposition adjacent to an inside or outside surface of a portion of the container.

85. (previously presented) The container of claim 84, wherein the at least one secondary shield comprises a cylindrical component adapted for disposition adjacent to an inner or outer surface of a cylindrical portion of the container.

86. (previously presented)A container for use in packaging a nuclear reactor pressure vessel head with attached control rods for transport as radioactive material, the container comprising a plurality of components configured to pass through an existing access to a structure containing a nuclear reactor pressure vessel, and for containing a plurality of control rods attached to the pressure vessel head.

87. (previously presented)A container for use in packaging a nuclear reactor pressure vessel head with attached control rods for transport as radioactive material, the container configured for:

containing a plurality of control rods attached to the pressure vessel head;
attachment to at least one surface of the pressure vessel head; and
leaving a portion of the pressure vessel head exposed.